# The Impact of New Technologies on Relationship Marketing[1]

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New information and communication technologies (NICT) are constantly emerging,, and establishing customer loyalty is a growing concern. Therefore, it is essential to analyze the impact of these technologies on customer behaviour. The purpose of this study is to explore, **in the banking sector, the impact of customers' use of self-service technologies on their interest in a relationship approach, and consequently in a long-term personalized relationship.** A survey of 242 adult students reveals that there is no real impact of the use of self-service technologies on interest in a relationship approach. Respondents who use these technologies considerably do not place more or less importance on their relationship with a given bank.

The '80s and '90s were marked by an unprecedented deployment of new information and communication technologies (NICT). With the increase in clientele, the proliferation of points of service and the diversification and multiplication of the line of products and services offered, certain companies have no alternative but to turn to technology to remain competitive in a market which, it goes without saying, is extremely competitive (Venkatraman, 1994). The object of this study, the financial sector, is one of the most affected by technology (Prendergast & Marr, 1994). The financial sector's mission is oriented mainly on operations, and basically consists in handling money. Financial milieus, strictly speaking, have taken on a more "speculative" vocation. Information access, management and processing is now a major preoccupation in financial circles, especially given the realization that corporate prosperity is contingent on the ability to control information (Venkatraman, 1994).

"S*elf service technologies*" have achieved notable popularity. Several of these technologies, including automatic banking machines, terminals (debit) at points of sale (debit /credit cards) and "*home banking*" via television, telephone or personal computer have already been favourably received by customers. This is partly attributable to the advantages conferred on both parties: efficiency and effectiveness for banks, convenience, leeway and even cost reduction for customers. The recourse to new technologies nonetheless raises a challenge for banks, which must not only preserve their market share, but must actually increase it (Roth & Van Der Velde, 1989). Moreover, it would be unrealistic to claim that the use of technology in the financial world is solely advantageous. It remains uncertain whether self-service technologies can keep customers "close" to the bank. These technologies may well lead to a standardization of products and services and a gradual robotization that may be poorly received by the customers. This process may even engender a "multibank scenario."

The purpose of this study is to explore, **in the banking sector, the impact of the use of self-service technologies by individuals on their interest in a relationship approach, and consequently in a long-term personalized relationship.** In the paragraphs below, the concept of the relationship approach and banking technologies are briefly presented, followed by the study methodology and results and a short discussion of the implications.

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## The relationship approach

The relationship approach concept has been explored by several researchers (Ricard & Perrien, 1998; Gumesson, 1998), in diverse domains (commercial, industrial, banking, etc.). One constant in the definition of this term has emerged from these studies: the relationship approach designates all marketing activities undertaken by a company to establish, develop and especially to **maintain** good relations with its partners (Morgan & Hunt, 1994).

Strictly speaking, the objective of this approach is to maximize the benefits over time for the two groups of participants, ensuing from a set of transactions –the plural is crucial here – because a single transaction cannot be determinant in itself. However, a transaction can be the starting point for a long-term relationship. Over time, a degree of interdependence develops between the parties, founded primarily on mutual trust, in-depth communication, common objectives and long-term commitment (Dwyer, Schurr & Oh, 1987).

Maintaining and developing the relationship approach demands considerable effort and resources from the players (Dwyer, Schurr & Oh, 1987). In effect, the exchange is not limited to the transaction itself. In the relationship context, personal exchanges are critical (Shani & Chalasani, 1992, Wynant & Hatch, 1991) and more importantly, during such exchanges, it is the reinforcement of the relationship *per se* that is more valuable than the exchange.

In the literature, the relationship approach concept has been associated with several other dimensions, although there has been no consensus as to the types of dimensions that make up the relationship approach. Nonetheless, the following dimensions have been frequently cited:

- duration of the relation (Dwyer & al., 1987; Ricard & Perrien, 1998);
- adaptability/personalization (Teas et al., 1989; Ricard & Perrien, 1998);
- equity (Moriarty et al., 1983; Ricard & Perrien, 1998);
- commitment (Morgan et Hunt, 1994; Dwyer et al. 1987).

## Technology

For many years, the concept of technology has been studied by several authors in diverse fields. The term refers to all of the tools, techniques and procedures used by individuals to perform a certain task (Reisman & Zhao, 1991; Sproull & Goodman, 1990). Technology is not limited to the material aspect; it also includes the notions of knowledge and software components that may be used.

There are several NICT on the market, that customers can use to satisfy nearly all of their financial needs. These technologies require only minimal human intervention, hence the common appellation "self-service technologies." Certain of these technologies are in the embryonic and pilot stages, whereas others are more developed. They fall into four major categories:

- credit cards (CC);
- automated teller machines (ATM);
- debit terminals at points of sale (POS from *Electronic Funds Transfer at the Point of Sale*);
- home banking.

A brief survey of 22 customers and six employees at two banks revealed that CC, ATM and POS were the most widely used banking technologies. Because most participants in this study did not use home banking. this technology was excluded from the present study.

A comprehensive analysis of the research conducted in technology as well as in information systems has identified four measures that are used quite frequently: usage frequency, intensity or degree of use, diversity of use and duration of use (Lee, 1986; Chébat, Laroche & Malette, 1988). These dimensions will be re-examined in this study.

**Use of technologies and the relationship approach**

The impact of the use of self-service technologies on the relationship approach, the subject of this research, is neither apparent nor evident. It is worth pointing out the existence of two diametrically opposed schools of thought: the first suggests that the use of technology has a positive impact on certain components of the relationship approach. For example, it may increase the customer's interest in this type of approach. The other perspective argues that the impact would be negative because the use of technology would diminish the customer's interest in the relationship approach.

Proponents of the former school believe that technology makes the client more captive and creates barriers against competitors. In effect, the use of bank cards or automatic deposits, withdrawals and transfers actually increases the number of transactions and links between the bank and the customer. According to Prendergast & Marr (1994), accessibility of services ("*convenience*") attracts customers, to a certain degree, and ties them to their bank. Furthermore, self-service technologies enable the bank to personalize its services (Roth & Van Der Velde, 1989). One such example is ATMs that offer a growing number of personal options to customers, including precise information on their account status. Home banking also commands customer loyalty and personalizes the customer's relations with the institution. The customer can carry out all transactions regardless of time or place. Moreover, at the customer's convenience he or she is granted unique attention.

For advocates of the second school of thought, the use of self-service technologies creates anonymity and a loss of contact with the clientele (Moutinho & Meidan, 1989). It merely offers the user more freedom (Moutinho & Brownlie, 1989). Consequently, the customer will be tempted to do business with several banks, to enjoy the advantages offered by each bank. The banks are thus thrown into competition. Because customers very often do not even know with whom they are dealing, the use of these technologies leads to a distancing of the customer and the bank (Farrance, 1993; Moutinho & Meidan, 1989) and a weaker relationship with the bank (Howcroft & Lavis, 1986). In addition, given the nature of these contacts (interaction with a machine or a screen), the relationship becomes depersonalized, even in the case of "*home banking.*" Ristau & Schnurr (1995, p.18) clarify this point: "A few *(banks in France) are still strongly opposed to the idea of launching telematic service; they argue that the elements of advice and contact, in a climate of trust, remain indispensable characteristics of the offer."* Note that various authors consider the latter aspect, (importance of the human rapport and the contact personnel) crucial in the implementation of a relationship approach, in particular for service businesses (Crosby, Evans and Cowles, 1990; Illingworth, 1991). Illingworth (1991) reported on the failure experience of a certain Cincinnati bank following installation of a totally automated bank branch: the customers preferred to interact with an employee rather than save a few minutes.

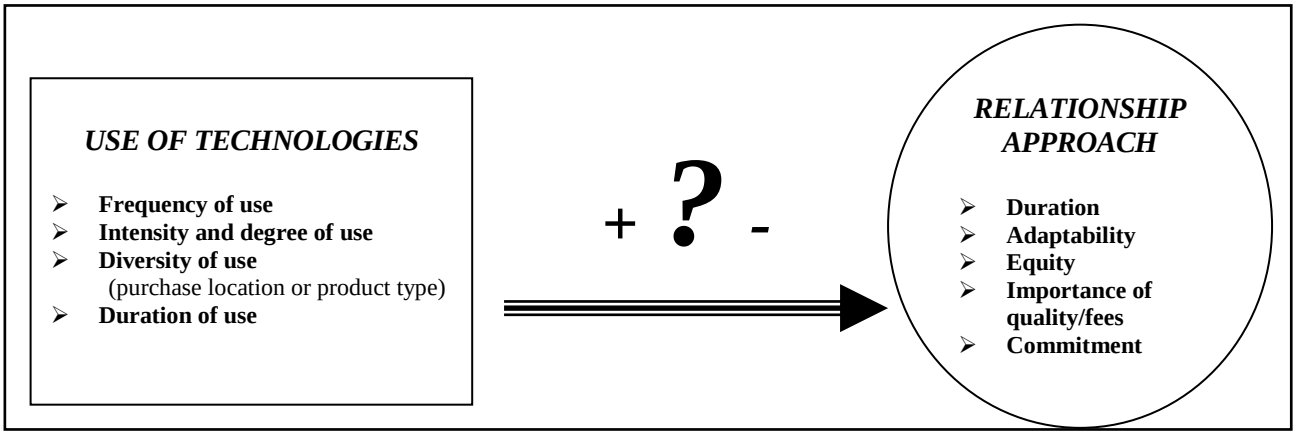
The main objective of this study is to explore factors related to the use of banking technologies that influence the dimensions of the relationship approach. The following hypotheses were formulated:

H1: The frequency of use of a self-service banking technology (CC, ATM and POS.) by a customer influences one of the dimensions of the relationship approach. The dimensions considered are: a) duration/continuity of the relationship with the bank; b) level of adaptability of the customer and the bank; c) equity perceived by the customer; d) importance the customer places on the quality of the relationship with the bank; e) importance the customer places on fees and interest rates; f) customer's commitment; g) customer's global perception of his/her relationship with the bank.

H2: The intensity and degree of use of a self-service banking technology (CC, ATM and POS) by a customer will influence one of the dimensions of the relationship approach.
H3: The diversity of use of a self-service banking technology (CC, ATM and POS) by a consumer will influence one of the dimensions of the relationship approach.
H4: The duration of use of a self-service banking technology (CC, ATM and POS) by a consumer will influence one of the dimensions of the relationship approach.

To summarize, the links between the various dimensions of the two concepts (use of technologies and the relationship approach) are examined. Figure 1 clearly illustrates the relationships in question, and appendices 1 and 2 provide the complete list of dimensions and variables.

**Figure 1**
The impact of the use of self-service technologies on interest in the relationship approach




## Methodology

To attain the study objectives, a sample of students attending evening courses was selected. The respondents were enrolled in part-time university studies and several were in the workforce. The population consumes banking products and services. A self-administered pre-tested questionnaire was used to gather a range of financial and personal information.

The questionnaire included three distinct sections, the first one bearing on the relationship between the respondent and the bank, the second on the use of self-service banking technologies and the final section on the respondent's socio-demographic profile. Most of the questions consisted of statements evaluated on a seven-point scale (1 = totally disagree, 7 = totally agree or 1 = not at all important, 7 = very important). Certain statements were inverted to avoid producing a halo effect. The data was collected by one of the researchers who visited each of the six pre-determined classes. The questionnaire was completed in 20 minutes. A total of 242 valid questionnaires were obtained for a response rate of 94.53 %. The dimensions selected for the relationship approach and for the use of self-service technologies are presented in appendices 1 and 2.

Table 1 – Reliability of the relationship approach measure

| **Dimensions of the relationship approach** | | **Alpha** |
|---|---|---|
| Duration /Continuity of the relationship | | 0.48 |
| Adaptability | Customer | 0.73 |
| | Bank | 0.72 |
| Equity | | 0.84 |
| Importance of the quality of the relationship | | 0.73 |
| Importance of fees and interest rates | | 0.54 |
| Commitment | | 0.56 |
| Global perceptual measure | | 0.83 |

Table 1 shows that the level of reliability of the constructs ranges from satisfactory to highly satisfactory.

The validity of the measures was examined and confirmed by two methods: a review of the literature and factor analysis. Three types of factor analysis were applied, namely *Principal Components Analysis* (PC), *Maximum Likelihood* (ML) and *Principal Axis Factoring* (PAF) to ensure the stability of the constructs and the pertinence of factors that measure the relationship approach. For each of these methods, two rotations were performed (Varimax and Oblimin). The analyses were done twice, the first time with no constraints placed on the number of factors and the second by limiting the number of factors to the number of factors desired. In light of these results, the dimension "Commitment" was eliminated. Not only was Cronbach's alpha rather weak ($\alpha$=0.56), but this

dimension has generally been overlooked by researchers. Moreover, the exclusion of this construct enhanced the stability of the other constructs in the global scale. For example, in factor analysis using the PC method, with 7 factors/constructs, 76% of the variance was explained.

The variables were then compared by means of canonical correlation analysis. These results are shown in Table 2. The three criteria recommended by Hair, Anderson and Tatham (1987) have been used to designate the canonical functions that will be interpreted. The first criterion examines the level of statistical significance of the canonical function. Levine (1977) showed that this criterion attempts to determine the exact number of independent relations between the two sets of variables. The second criterion recommended by authors relates to the magnitude of the canonical correlation. The higher the canonical correlation, the stronger the relationship between the set of linear combinations. However, the literature does not specify a predetermined acceptable limit or value. Therefore, the decision is often made based on the results' contribution to better understanding the problem under study. In light of these two criteria, two canonical correlations were selected

Table 2 – Analysis of canonical correlation

| | **Canonical correlation** | **Adjusted canonical correlation** | **Standard error** | **Canonical correlation squared** | **F statistic** | **Confidence level** |
|---|---|---|---|---|---|---|
| 1 | 0.6104 | 0.5347 | 0.0474 | 0.3726 | 1.8987 | **0.0001** |
| 2 | 0.4874 | 0.3728 | 0.0576 | 0.2375 | 1.4835 | **0.0024** |
| 3 | 0.4179 | 0.2813 | 0.0624 | 0.1746 | 1.2713 | 0.0631 |
| 4 | 0.3788 | _ | 0.0647 | 0.1435 | 1.1179 | 0.2581 |
| 5 | 0.3435 | _ | 0.0667 | 0.1180 | 0.9419 | 0.5811 |
| 6 | 0.2508 | 0.1460 | 0.0708 | 0.0629 | 0.6950 | 0.8877 |
| 7 | 0.1915 | _ | 0.0728 | 0.0367 | 0.5740 | 0.9173 |
| 8 | 0.1620 | _ | 0.0736 | 0.0262 | 0.5389 | 0.8258 |

**Multivariate test statistics**

| **Statistics** | **Value** | **F Statistic** | **Confidence level** |
|---|---|---|---|
| *Wilks' Lambda* | 0.2622 | 1.8987 | 0.0001 |
| *Pillai's Trace* | 1.1720 | 1.8309 | 0.0001 |
| *Hotelling - Lawley Trace* | 1.5504 | 1.9541 | 0.0001 |
| *Roy's Greatest Root* | 0.5939 | 6.3350 | 0.0001 |

The latter criterion measures the redundancy of the common variance. To evaluate the level of variance of a set of variables that may be explained by the variance of another set of variables, the Stewart-Love redundancy coefficient was used. This coefficient is similar to the $R^2$ statistic used in multiple regressions. Table 3 presents the values of this coefficient in the *Proportion* column under *Opposite Canonical Variables*. The examination of the values obtained *(Proportion column under Standard variance of dependent variables explained by: Opposite canonical variables*) reveals that the variance for the set of dependent variables explained by each of the canonical functions is very weak. For example, the first value of this coefficient indicates that 4.73 % of the variance in the dependent variables (the dimensions of the relationship approach) was explained by the linear combination of the set of independent variables (dimensions of use of banking technologies). Regarding the independent variables, the variance is even lower (*Proportion* column under *Standard variance of independent variables explained by: Opposite canonical variables*). To summarize, the results of the canonical analysis and the redundancy analysis demonstrate that:

- criterion 1: the first two canonical correlations are significant;
- criterion 2: the first two canonical correlations reveal interesting relationships for the set of linear combinations;
- criterion 3: the canonical functions do not seem to merit interpretation given that the variance explained by each of the canonical functions for the set of dependent and independent variables is very low.

Table 3- Analysis of redundancy

| | **Standard variance of dependent variables explained by:** | | | | |
|---|---|---|---|---|---|
| | **Canonical eigenvalue variables** | | | **Opposite canonical variables** | |
| | **Proportion** | **Cumulative proportion** | **Canonical $R^2$** | **Proportion** | **Cumulative proportion** |
| 1 | 0.1269 | 0.1269 | 0.3726 | 0.0473 | 0.0473 |
| 2 | 0.1476 | 0.2745 | 0.2375 | 0.0351 | 0.0823 |
| 3 | 0.1368 | 0.4113 | 0.1746 | 0.0239 | 0.1062 |
| 4 | 0.1944 | 0.6057 | 0.1435 | 0.0279 | 0.1341 |
| 5 | 0.0823 | 0.6880 | 0.1180 | 0.0097 | 0.1438 |
| 6 | 0.1266 | 0.8146 | 0.0629 | 0.0080 | 0.1518 |
| 7 | 0.0925 | 0.9071 | 0.0367 | 0.0034 | 0.1552 |
| 8 | 0.0929 | 1.0000 | 0.0262 | 0.0024 | 0.1576 |
| | **Standard variance of independent variables explained by:** | | | | |
| | **Canonical eigenvalues** | | | **Opposed canonical variables** | |
| | **Proportion** | **Cumulative proportion** | **Canonical $R^2$** | **Proportion** | **Cumulative proportion** |
| 1 | 0.0714 | 0.0714 | 0.3726 | 0.0266 | 0.0266 |
| 2 | 0.1028 | 0.1742 | 0.2375 | 0.0244 | 0.0510 |
| 3 | 0.0763 | 0.2506 | 0.1746 | 0.0133 | 0.0644 |
| 4 | 0.0508 | 0.3014 | 0.1435 | 0.0073 | 0.0716 |
| 5 | 0.0443 | 0.3456 | 0.1180 | 0.0052 | 0.0769 |
| 6 | 0.0535 | 0.3991 | 0.0629 | 0.0034 | 0.0802 |
| 7 | 0.0537 | 0.4528 | 0.0367 | 0.0020 | 0.0822 |
| 8 | 0.0508 | 0.5036 | 0.0262 | 0.0013 | 0.0835 |

Given these partly contradictory results and the results obtained for the first two criteria, the analyses were taken further. The correlations obtained between the variables and their respective linear combinations (*Canonical loadings*) and those between the variables and the linear combinations of the opposite set of variables (*Canonical cross-loadings*) were examined, for the first two canonical functions (See tables 4 and 5). These results made it possible to determine the relative significance of each of the variables in the formation of the canonical functions. Note that the higher the correlation, the more the corresponding variable contributes to the formation of the linear combination. For example, Table 4 shows that the first canonical function of the use of banking technologies presented is mainly and positively associated with the duration of use of a CC (*DURCC* = 0.7953). In contrast, the intensity of use of a POS (*INTPOS* = -0.3975), the diversity of the location where an ATM is used (*DIVLATM* = -0.3180) and a POS (*DIVLPOS* = -0.2173) are negatively related to this function. For the second canonical function, the number of variables is higher: *FREQATM, FREQPOS, INTCC, INTPOS, DIVLCC, DIVLATM, DIVAATM, DURATM* and *DURPPOS* have the greatest positive influence on their function.

As for the correlations between the variables and the linear combinations of the opposite set of variables that appear in Table 5 (*Canonical cross-loading*), Hair, Anderson and Tatham (1987) consider that this analysis provides more direct measures of the relationship that exists between the dependent and independent variables. They therefore recommend canonical cross-loading as a canonical function interpretation method. The correlation between the variable *DUR2* and the first linear combination of the use of technologies is the highest (r = 0.54). This correlation squared provides the percentage of variance explained by the linear combination of the variables related to technology use. The percentage of explained

variance is 29.14 %. For the second function, it is primarily variables related to adaptation (*ADAPTC*, *ADAPTB*) and *IQUAL* that possess a correlation higher than 0.20. Nonetheless, the variance associated with these variables is rather low, especially because their respective correlations were not very high to begin with.

In conclusion, a weak relation is seen between the set of dimensions for these two concepts. In effect, less than 5% of the variance of the dependent variables (dimensions of the relationship approach) was explained by the linear combination of the set of independent variables (dimensions of the use of banking technologies). Nonetheless, the first two canonical functions that indicate significant canonical correlations and the noteworthy relations for the set of linear combinations have been examined in order to detect which variables contributed the most to the formation of their linear combinations.

Table 4 - Correlations between the independent and dependent variables and their respective linear combinations

| Correlations between independent variables and their canonical variables (Canonical Loadings) | | | Correlations between dependent variables and their canonical variables (Canonical Loadings) | | |
|---|---|---|---|---|---|
| **Variables** | **Function 1 (UT1)** | **Function 2 (UT2)** | **Variables** | **Function 1 (AR1)** | **Function 2 (AR2)** |
| ***FREQCC*** | 0.1380 | 0.0192 | ***DUR1*** | **0.2516** | -0.1800 |
| ***FREQATM*** | 0.0744 | **0.5178** | ***DUR2*** | **0.8843** | **0.2952** |
| ***FREQPOS*** | -0.0913 | **0.5327** | ***ADAPTC*** | -0.1503 | **0.4387** |
| ***INTCC*** | 0.1276 | **0.2747** | ***ADAPTB*** | **-0.2214** | **0.6358** |
| ***INTATM*** | 0.0892 | 0.1406 | ***EQUITY*** | -0.1047 | 0.1012 |
| ***INTPOS*** | **-0.3975** | **0.5090** | ***IQUAL*** | -0.1907 | **0.5150** |
| ***DIVLCC*** | 0.1124 | **0.2105** | ***IFEES*** | **0.2213** | **-0.3756** |
| ***DIVACC*** | -0.0950 | 0.0553 | ***GLOBMES*** | 0.0452 | **0.2189** |
| ***DIVLATM*** | **-0.3180** | **0.4523** | | | |
| ***DIVAATM*** | -0.0457 | **0.3018** | | | |
| ***DIVLPOS*** | **-0.2173** | 0.1391 | | | |
| ***DIVAPOS*** | -0.1950 | 0.1686 | | | |
| ***DURCC*** | **0.7953** | 0.1978 | | | |
| ***DURATM*** | 0.0999 | **0.2942** | | | |
| ***DURPOS*** | 0.0555 | **0.3458** | | | |

Note: Values in bold highlight correlations with absolute values greater than 0.20 and indicate that the corresponding variables contribute most (positively or negatively) to the formation of the canonical function in question.

The results of the correlations presented in Table 5 (*Canonical cross-loadings*) indicate that the duration of the banking relationship (*DUR2*) is the dimension of the relationship approach (variance 29.14 %) that is best explained by the linear combination of dimensions related to the use of technologies. The variance associated with the other dimensions of the relationship approach (for the first two canonical functions) is below 10%.

Table 5 - Correlations between the independent and dependent variables and the linear combination of the set of dependent and independent variables

| Correlations between independent variables and the canonical variables of the dependent set (Canonical Cross-Loadings) | | | Correlations between dependent variables and the canonical variables of the independent set (Canonical Cross-Loadings) | | |
|---|---|---|---|---|---|
| **Variables** | **Function 1 (AR1)** | **Function 2 (AR2)** | **Variables** | **Function 1 (UT1)** | **Function 2 (UT2)** |
| ***FREQCC*** | 0.0842 | 0.0094 | ***DUR1*** | 0.1536 | -0.0877 |
| ***FREQATM*** | 0.0454 | **0.2524** | ***DUR2*** | **0.5398** | 0.1439 |
| ***FREQPOS*** | -0.0557 | **0.2596** | ***ADAPTC*** | -0.0917 | **0.2138** |
| ***INTCC*** | 0.0779 | 0.1339 | ***ADAPTB*** | -0.1351 | **0.3099** |
| ***INTATM*** | 0.0544 | 0.0685 | ***EQUITY*** | -0.0639 | 0.0493 |
| ***INTPOS*** | **-0.2427** | **0.2481** | ***IQUAL*** | -0.1164 | **0.2510** |
| ***DIVLCC*** | 0.0686 | 0.1026 | ***IFEES*** | 0.1351 | -0.1831 |
| ***DIVACC*** | -0.0580 | 0.0269 | ***GLOBMES*** | 0.0276 | 0.1067 |
| ***DIVLATM*** | -0.1941 | **0.2204** | | | |
| ***DIVAATM*** | -0.0279 | 0.1471 | | | |
| ***DIVLPOS*** | -0.1327 | 0.0678 | | | |
| ***DIVAPOS*** | -0.1190 | 0.0822 | | | |

| | | | |
|---|---|---|---|
| ***DURCC*** | **0.4854** | 0.0964 | |
| ***DURATM*** | 0.0610 | 0.1434 | |
| ***DURPOS*** | 0.0339 | 0.1685 | |

Note: Values in bold highlight correlations with absolute values greater than 0.20 and indicate that the corresponding variables contribute most (positively or negatively) to the formation of the canonical function in question.

Given these results and the limitations of the canonical analysis formulated by Hair, Anderson and Tatham (1987), multiple regression analyses were performed to tease out the relationship between the two concepts. For these analyses, certain variables were transformed in order to standardize their distribution. Regressions were performed using the "*stepwise*" procedure, which identifies the significant independent variables while minimizing the effects of multicollinearity. Table 6 shows these results. Out of eight links between the dimensions of the relationship approach (dependent variable) and those related to the use of banking technologies (independent variable) that appear in Table 5, only one link (*DUR2*) possesses a high explanatory power ($R^2 > 0.26$ according to Cohen's table reproduced in Sawyer & Ball, 1981). All of the other relations have weak explanatory power ($R^2 < 0.13$); the dimension *EQUITY* was not explained at all.

As shown in Table 6, the variance of the real duration (*DURATION 2*) is largely explained by the duration of use and the diversity of use of applications of a CC (*DURCC* and *DIVACC*). Therefore, the more an individual has been using a CC for a number of years, and the less the card is used for a varied number of applications, the more likely the customer is to have dealt with his/her financial institution for many years. The first part of this observation is quite logical: association between the duration of the business relationship between the individual and the bank and the number of years of possession of a CC –often remitted by the financial institution. The second section (the less one uses various types of applications of a CC, the longer one has been dealing with a financial institution) seems less evident. Further research is needed to explore this finding in depth.

Table 6 - Results of the regression analysis

| | $R^2$ | F | Dl | Variables | $\beta$ [1] |
|---|---|---|---|---|---|
| DURATION 1 | 0.09 | 5.58 *** | 3 : 175 | INTPOS | - 0.29 *** |
| | | | | INTCC | - 0.22 *** |
| | | | | FREQPOS | 0.20 ** |
| DURATION 2 | 0.27 | 15.39 **** | 4 : 175 | DURCC | 0.52 **** |
| | | | | DIVACC | - 0.26 **** |
| | | | | FREQATM | 0.13 * |
| | | | | DIVAPOS | - 0.12 * |
| ADAPTC | 0.08 | 5.25 *** | 3 : 175 | INTATM | - 0.28 **** |
| | | | | FREQATM | 0.16 ** |
| | | | | DURPOS | 0.16 ** |
| ADAPTB | 0.08 | 4.82 *** | 3 : 175 | FREQATM | 0.18 ** |
| | | | | FREQPOS | 0.18 ** |
| | | | | INTATM | - 0.13 * |
| EQUITY | N.S. | | | | |
| IQUAL | 0.07 | 4.14 *** | 3 : 175 | FREQPOS | 0.24 ** |
| | | | | DURPOS | - 0.15 * |
| | | | | FREQATM | 0.13 * |
| IFEES | 0.06 | 3.81 *** | 3 : 175 | DIVAPOS | 0.20 ** |
| | | | | INTPOS | - 0.17 ** |
| | | | | FREQATM | - 0.17 ** |
| GLOBMES | 0.05 | 4.17 ** | 2 : 175 | FREQATM | 0.22 *** |

| | | |
|---|---|---|
| | INTATM | - 0.13 * |

1. The stasndardized coefficients are presented, because not all the variables were measured using the same scale.
2. Interpretation of levels of confidence: *= $p < 0.1$; **= $p < 0.05$;***= $p < 0.01$; ****= $p < 0.001$; N.S.= Non-significant

To summarize, only two dimensions of the use of banking technologies have a significant impact on a single dimension of the relationship approach. The variance in the different dimensions of the relationship approach does not seem to be explained by dimensions related to the use of banking technologies.

## Conclusion

Although most researchers agree on the existence of a link between the use of banking technologies and the relationship approach, opinions differ as to the direction of this relationship, namely positive or negative. In fact, the overall results of our analyses do not fully corroborate this viewpoint in either sense. Instead, the results reveal the near absence of a relationship between the concept of the use of self-service banking technologies and the relationship approach.

On the one hand, simple correlations between the dependent and independent variables reveal rather weak relationships between the variables (nearly all below 0.25). Only the relationship between the real duration of the relationship with the bank and the duration of use of the CC can be described as average, with a coefficient of 0.49. On the other hand, the results of the canonical correlation analysis also point to the absence of a relationship between the set of dimensions of the use of self-service banking technologies and those of the relationship approach. In effect, less than 5% of the variance of the dimensions of the dependent variable have been explained by the linear combination of the set of dimensions of the independent variable. Despite the existence of these weak links, we nonetheless sought to determine the variables that contributed most significantly to the formation of canonical functions, for the first two canonical functions (canonical correlations of these two functions are significant and indicate interesting relations for the set of linear combinations). The real duration of the banking relationship is the only dimension of the relationship approach for which the variance is explained to a satisfactory extent by the linear combination of the dimensions of the use of banking technologies (29.14%). The variance of the other dimensions of the dependent variable does not exceed 10%. Moreover, the results of the multiple regression analyses confirm those of the two preceding analyses. They indicate that the variance in the dimensions of the relationship approach are not explained by those of the use of self-service banking technologies (the relations are very weak: the $R^2 < 0.13$). Only one dimension--duration of the relationship with the bank--is partly explained ($R^2 > 0.26$) by the duration of use of a CC and the absence of diversity of the use of applications of a CC

The absence of links between the two concepts has certain implications for financial institutions. For example, given the advantages of NICT for financial institutions and bearing in mind the non-negative impact of the use of self-service technologies on the relationship approach, it is possible that banks' investment in new technologies, specifically self-service technologies, do not affect their relationships with the customers. It is important to remember that NICT offer several advantages to financial institutions. They enhance profitability through cost reduction, for example, and increase efficiency by boosting the speed and efficacy of service, among other factors. Self-service technologies also facilitate contact with the customers.

Nonetheless, these results should be interpreted with caution. In effect, the choice of a student population for this study engenders certain biases. First, the respondents' social and demographic profile does not necessarily correspond with that of the general public. Another limitation stems from the fact that certain exogenous factors have not been integrated into the analyses, for example control over the impact of sex, salary or even prior training on the respondent's perception of the importance of the relationship approach and the respondent's attitude toward the use of NICT.

If the customer's interest in a relationship approach therefore does not seem to be affected disproportionately by the use of self-service banking technologies, financial institutions should nonetheless take into consideration the importance of the relationship with the customer and strive to maintain and develop this relationship. The relationship approach offers several advantages to financial institutions, including more productive, personalized and efficient interaction with the customers. To a growing extent, NICT, specifically self-service technologies, can be used in innovative ways to promote the creation and maintenance of a personalized relationship. The relationship approach, like the use of banking technologies, must therefore remain a primary concern of managers and directors of financial institutions.

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Appendix 1- Dimensions selected for the relationship approach in the banking sector

| **Dimensions and legend** | | **Measures** |
|---|---|---|
| Duration / continuity of relationship | Duration *DUR2* | . Number of years the customer has been dealing with the bank |
| | Cont. *DUR1* | . Probability that the customer will no longer do business with his/her bank 2 years from now (-)<br>. Customer loyalty: did the customer try to change banks in the past year? (-) |
| Adaptability | Customer *ADAPTC* | . The customer makes every effort to have a good relationship with the bank<br>. The customer is ready to adjust to the bank's requirements<br>. Importance of a long-term relationship |
| | Bank *ADAPTB* | . The bank makes every effort to adapt to the customer's needs<br>. The bank is always ready to solve the customer's problems |
| Equity *EQUITY* | | . The bank devotes as much effort to the relationship as the customer<br>. The bank invests as much time in the relationship as the customer<br>. Is the relationship more beneficial to the customer or the bank? |
| Importance of the quality of the relationship *IQUAL* | | . Importance of the quality of the relationship with the bank<br>. Importance of personalized service<br>. Importance of quality of service |
| Importance of fees and interest rates *IFEES* | | . Sensitivity to credit conditions and interest rates (-)<br>. Importance of service charges (-) |
| Commitment *COMMIT* | | . The customer asks the bank for the new service<br>. Automatic renewal of products and services upon expiration<br>. The customer finds out about conditions at other institutions before renewing the service at the bank (-) |
| Global perceptual measure *GLOBMES* | | . The financial institution favours the relationship approach<br>. The financial/bank advisor has this type of relationship with the customer |

Note: 1. The negative sign following certain statements indicates that the scales are inverted for these sentences.

Appendix 2 - Dimensions selected for use of self-service banking technologies

| **Dimensions** | **Techno.** | **Measures and legend** |
|---|---|---|
| Frequency | CC | . Number of times per month - *FREQCC* |
| | ATM | . Number of times per month – *FREQATM* |
| | POS | . Number of times per month – *FREQPOS* |
| Intensity/ Degree | CC | . Proportion of total monthly expenses paid by CC – *INTCC* |
| | ATM | . Proportion of monthly transactions by ATM out of all bank transactions– *INTATM* |
| | POS | . Proportion of total monthly expenses paid by POS- *INTPOS* |
| Diversity (Place and type | CC | . Location of CC use – *DIVLCC*<br>. Type of application used: payment, cash withdrawal on CC - *DIVACC* |

| | | |
|---|---|---|
| of application) | ATM | . Place of ATM use – *DIVLATM*<br>. Type of application used – *DIVAATM* |
| | POS | . Place of POS use – *DIVLPOS*<br>. Type of application used: payment, cash withdrawal on DC - *DIVAPOS* |
| Duration | CC | . Number of months CC used – *DURCC* |
| | ATM | . Number of months ATM used – *DURATM* |
| | POS | . Number of months POS used – *DURPOS* |